

APPENDIX B

TRAINING DEVICES AND AIDS

*Training devices and training aids enable soldiers to learn as much as they can about a weapon before they try the real thing. This procedure saves money and time, and it prevents injuries. **Training devices** both look and behave like the real weapon, but are cheaper and safer to practice with. **Training aids** include anything else used to help soldiers learn to use a weapon. Trainers should use their imaginations and invent or adapt other training aids from available resources.*

B-1. LAW SUBCALIBER TRAINING DEVICE

The only M72-series LAW training device designed for individual use is a subcaliber trainer (Figure B-1). This device, referred to as the M190 subcaliber launcher, is made by adding an M190 subcaliber conversion kit (NSN 1340-00-420-7999) (Figure B-2) to an expended M72-series LAW launcher. It is used to fire the M73 subcaliber (35-mm) rocket. This 36-mm rocket is shorter and lighter than the LAW's 66-mm tactical rocket. It simulates the tactical rocket's smoke and flight trajectory but with less noise and backblast. The expended launcher is likely to wear out before the subcaliber inner tube does. When this happens, the inner tube can be transferred to another expended launcher. The M190 subcaliber launcher can be used in all training phases, from a fixed firing line to simulated tactical situations such as a squad live-fire exercise.

NOTE: The local Training Support Center (TSC) can install the conversion kits, but DOD Regulation 5100.76-M requires that all sensitive conventional arms, ammunitions, and explosives, including expended launchers, be carefully controlled.

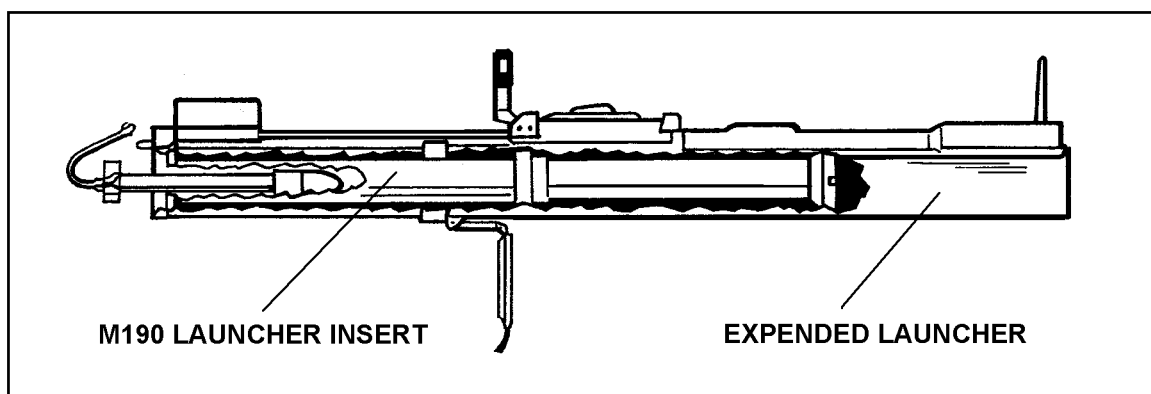


Figure B-1. LAW subcaliber trainer.

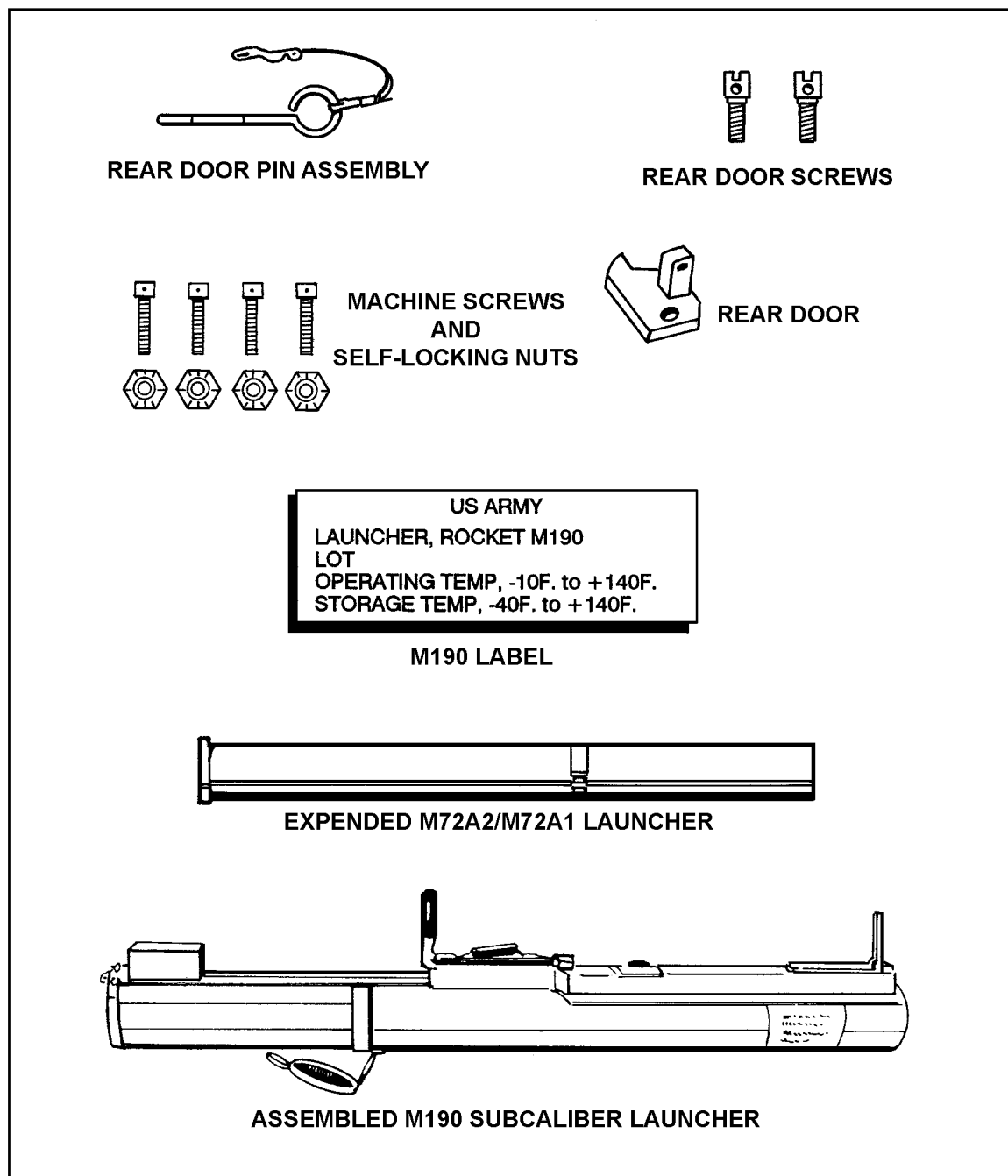


Figure B-2. M190 subcaliber conversion kit.

a. **Technical Data.**

(1) Technical data for the M73 35-mm subcaliber practice rocket are as follows:

Length.....	22.48 cm (8.86 inches)
Diameter	3.51 cm (1.38 inches)
Weight	154 grams (5.39 ounces)
Range.....	10 to 250 meters (9.14 to 228.5 yards)
Propellant Charge	3 tubular grains of M7
Spotting Head Charge	05 oz (1.5 grams) of composition mix M80

(2) Technical data for the assembled M190 practice rocket launcher are as follows:

Diameter of launcher	12.45 cm (4.9 inches)
Diameter of rocket tube	3.56 cm (1.4 inches)
Weight (with rocket).....	2.26 kg (5.02 pounds)
Length of launcher	
Extended	89.9 cm (35.4 inches)
Collapsed	64.26 cm (25.32 inches)
Sights	Open, temperature compensating

b. **Trigger.** This is the same as for the LAW.

c. **Sights.** These are the same as for the LAW.

d. **Operation.** The LAW subcaliber training device operates the same as an M72-series LAW. After the M190 has been loaded, it may remain closed, or it can be extended and fired. Either way, the procedures are the same as those for the LAW.

CAUTION

When loading the law subcaliber trainer, ensure the rear cover is open, the sling assembly is off, and the launcher is collapsed.

e. **Loading.** To load the M73 rocket into the M190 launcher (Figure B-3)—

- (1) Twist and remove the primer housing lockpin and open the primer housing door.
- (2) Remove the fired primer block (if present) from the primer block cavity of the launcher.
- (3) Inspect the primer block cavity for obstructions such as primer case stuck on the firing pin.
- (4) Pivot and remove the safety clip from the rocket.
- (5) Insert the M73 rocket into the launcher with the primer face up and toward the firing pin housing.
- (6) Guide the primer block into the primer block cavity with the primer toward the front of the launcher. Close the primer housing door, insert the lockpin across the primer housing door, and twist to ensure a spring-tight fit. Ensure the primer housing door fits snugly.

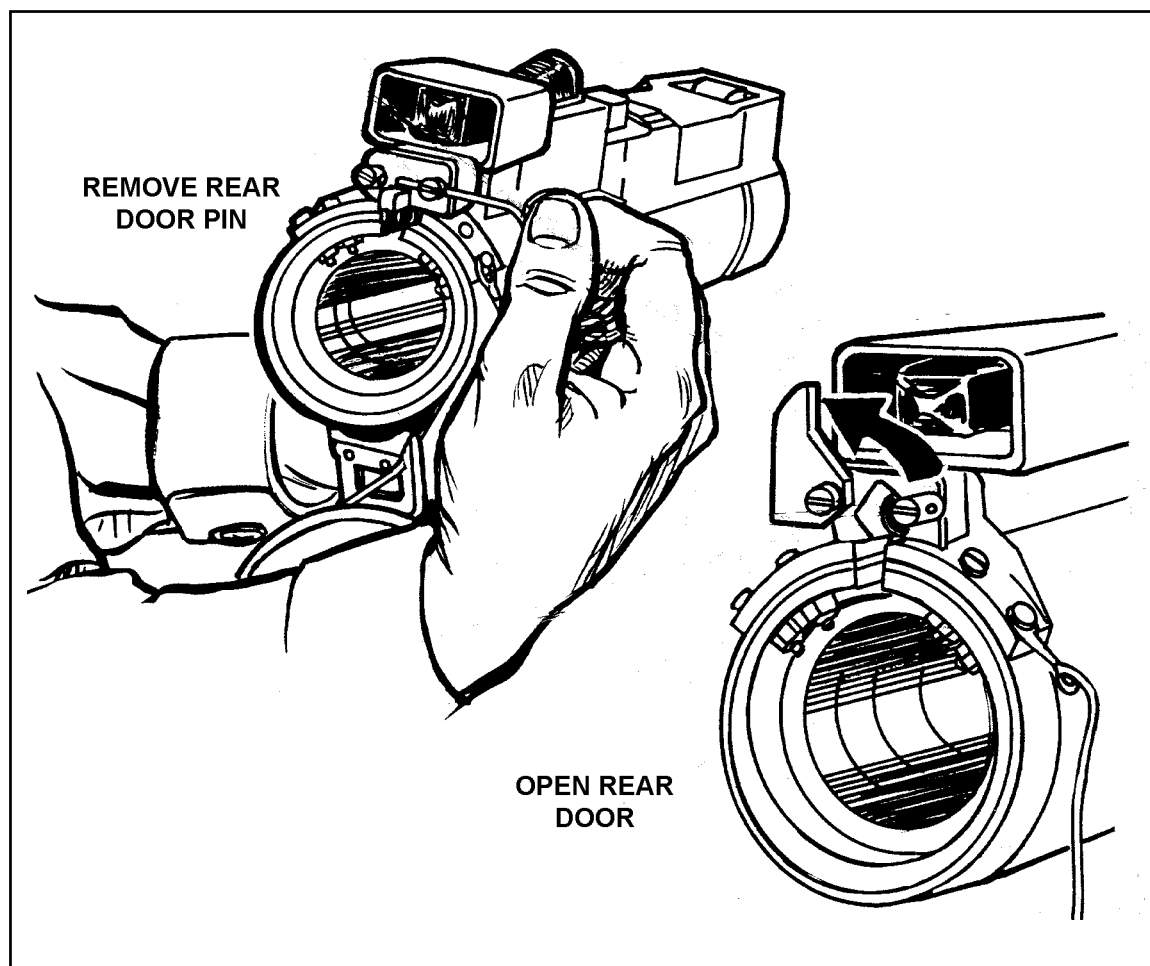


Figure B-3. Loading the LAW subcaliber launcher.

f. **Unloading.** To unload the M73 rocket from the M190 launcher—

- (1) Return the arming handle to SAFE.
- (2) Remove the weapon from your shoulder, keeping the weapon pointed downrange.
- (3) Partly collapse the launcher, and remove the primer housing lockpin.
- (4) Open the primary housing door, and remove the primer from its housing.
- (5) Remove the rocket.
- (6) Replace the safety clip on the rocket.
- (7) Place the rocket in its original container.

g. **Function.** The M73 rocket launches the same as tactical rocket, but when the rocket head strikes the target, it sets off the spotting head that produces a flash, noise, and white smoke.

CAUTION

The M73 subcaliber rocket operates between -23 degrees and 60 degrees centigrade (-10 degrees and 140 degrees fahrenheit). Fire it only within this temperature range.

- h. **Misfire Procedures.** These are the same as for the M-72 series LAW.
- i. **Range Procedures and Safety.** These procedures are the same as for the LAW. The training device can be used against all solid stationary or moving targets. However, because the subcaliber rocket can penetrate 0.124 inches (0.315 cm) of steel plate or 8 inches (20.32 cm) of soft wood, the target should be constructed of 3/16-inch steel plate backed by 3/4-inch plywood.
- j. **Combat Techniques.** These are the same as for the LAW.

B-2. AT4 FRONT SIGHT TEMPLATE AND TARGET SILHOUETTE SHEET

This graphic training aid (GTA 7-2-5), Sight Engagement Trainer, AT4, consists of two parts: Part 1, a front sight template, and Part 2, a target silhouette sheet. These are used together to train soldiers to obtain a correct sight picture. To obtain the correct sight picture for the target speed and range, the front sight template is placed on the target silhouette sheet as shown in Figure B-4. For each of the six targets, the reference number sheet shows the number that should appear in the circle on the front sight template. The reference number sheet is also used to determine the correct answer for any unit-developed test concerning Training Objective 12 task, Determine the Correct Sight Picture for the M136 (AT4). The local TSC can provide GTA 7-2-5.



Figure B-4. Using GTA-7-2-5 with target silhouette sheet and front sight template.

B-3. AT4 FIELD HANDLING TRAINER

The AT4 field handling trainer (FHT) is an inert device made from an expended AT4 tactical launcher. It simulates the weight, balance, characteristics, and operation of the launcher. The FHT is marked with either a gold or yellow 1-inch band between the front and rear sights, and with the word "DUMMY" in 1-inch letters on the side of the launch tube. The local TSC can convert expended launchers to training devices, but DOD Regulation 5100.76-M requires that these items be carefully controlled. The FHT is appropriate for several training situations that do not require the M287 tracer trainer, which prevents unnecessary damage to the tracer trainer. The FHT is used in marksmanship training, FTXs, and institutional training to help soldiers learn how to do the following:

- Inspect the AT4 for serviceability.
- Prepare an AT4 for firing.
- Demonstrate the correct AT4 firing position.
- Perform misfire procedures.
- Return an AT4 to carrying position.

B-4. AT4 SUBCALIBER TRACER TRAINER

The M287 subcaliber tracer trainer (Figure B-5) uses the 9-mm M939 training practice-tracer (TP-T) cartridge. When loaded, this trainer simulates the AT4 in weight, balance, and operation. The velocity and trajectory of its ammunition match that of the AT4's HEAT cartridge, but the M287 produces less noise, backblast, and overpressure. The M287 subcaliber tracer trainer is used in place of the AT4 in training.

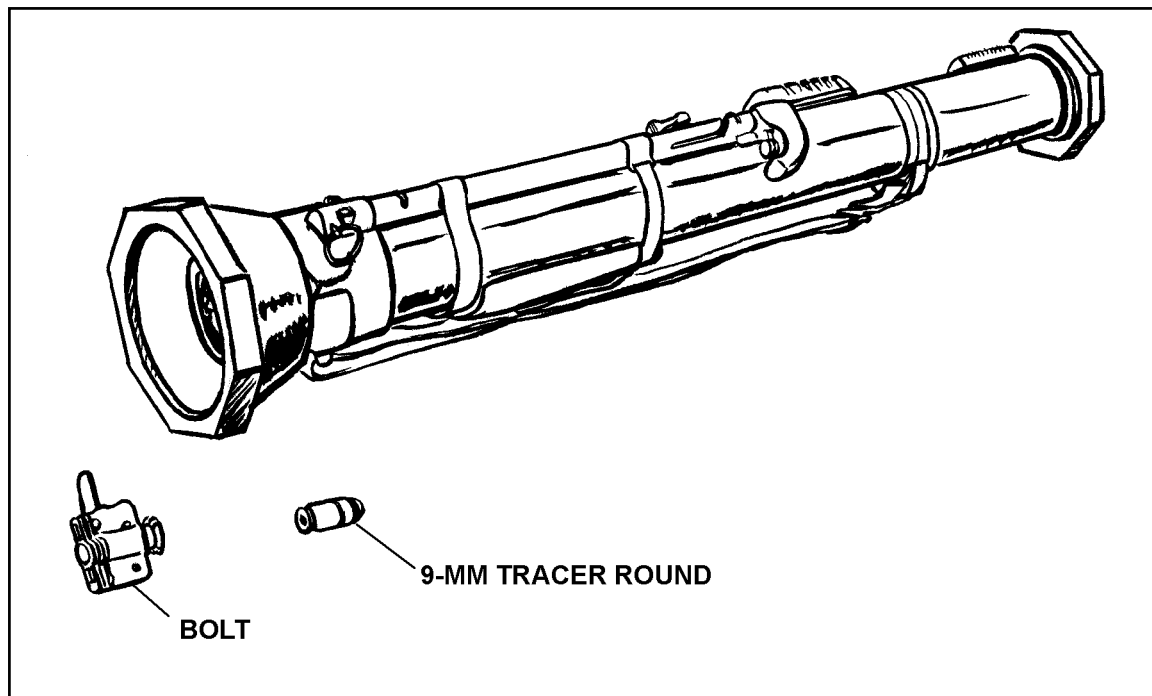


Figure B-5. M287 subcaliber tracer trainer.

a. **Description.** The M287 tracer trainer is a specially constructed AT4. Unlike the LAW subcaliber trainer, it is *not* made from an expended launcher, so it has its own NSN. It is designed to accept a special rifle barrel that fires a reduced-load 9-mm cartridge.

(1) The M287 may be fired at stationary or moving targets. Before it can be fired at a target tank occupied by personnel, the parts of the tank that could suffer damage must be shielded. The local TSC can provide specifications for modifying tanks to be used as targets for the M287 tracer trainer.

(2) Unlike the M136 AT4 itself and the FHT, the M287 has no band between the front and rear sights. The trainer has a 9-mm submachine gun barrel, a breach assembly, and a bolt (Figure B-6). The bolt is easily removed to load the 9-mm cartridges and to inspect the barrel for obstructions.

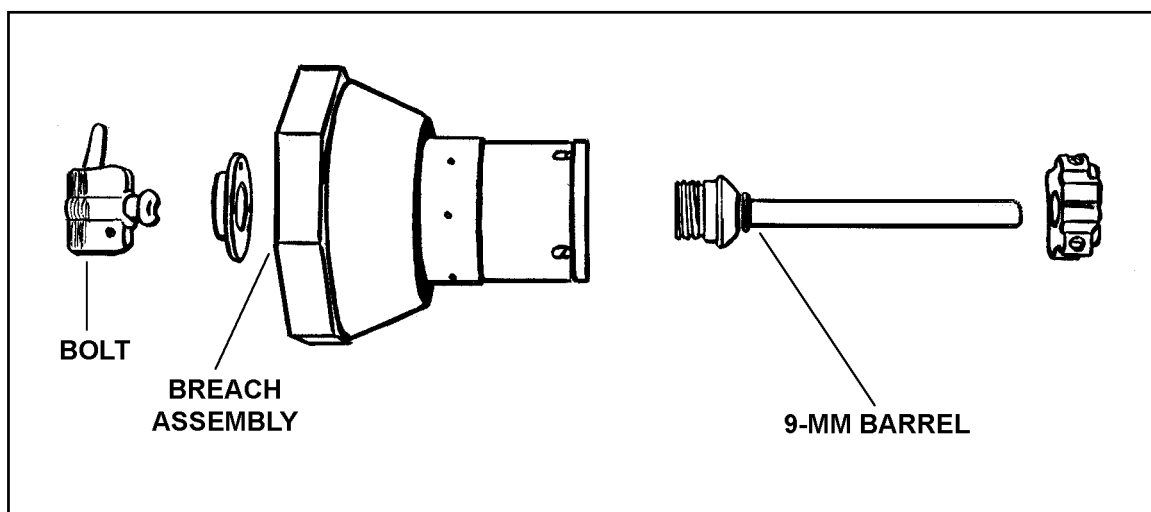


Figure B-6. M287 barrel assembly and components.

(3) If the M287 tracer trainer is damaged, the unit armorer can replace its complete firing mechanism, firing rod, bolt, sights, sling, and 9-mm barrel assembly (Figure B-7).

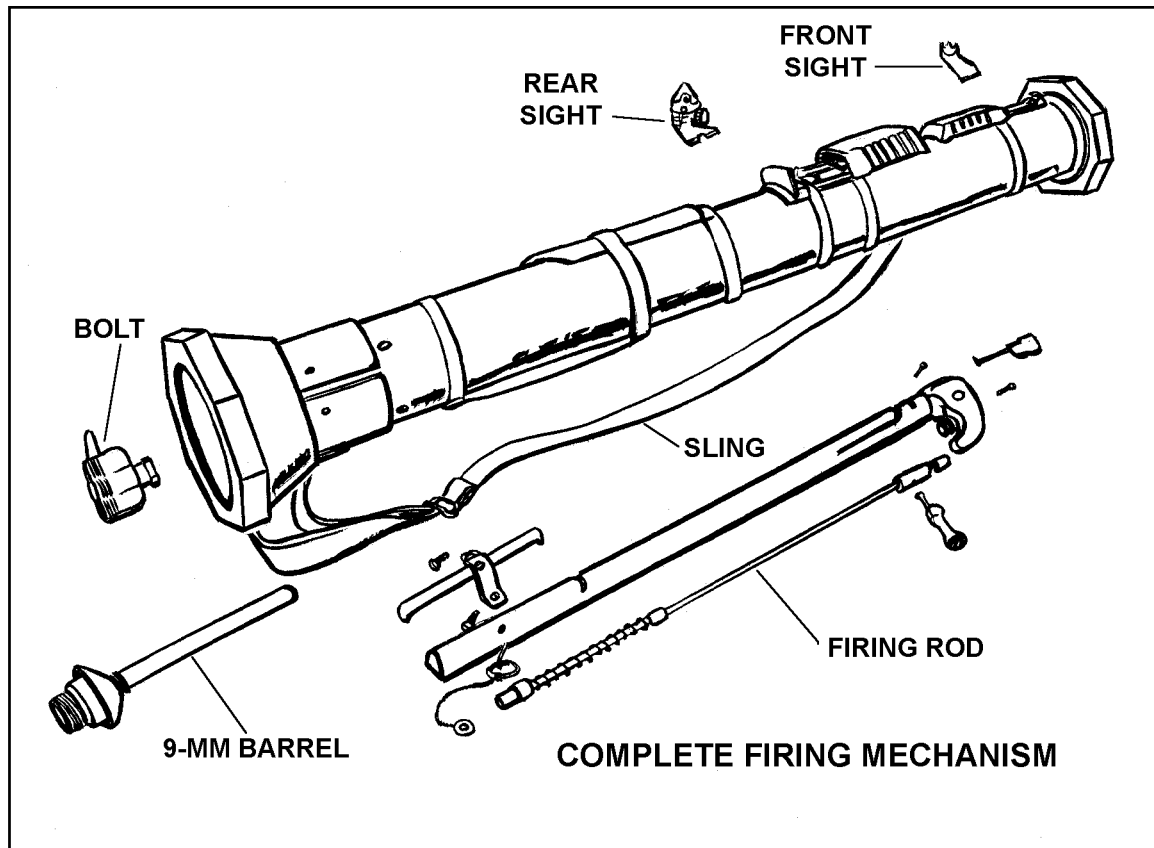


Figure B-7. Replaceable parts for the M287 tracer trainer.

b. **Technical Data.** The following technical data apply to the M287 subcaliber tracer trainer:

Length.....	1,020 mm (40 inches)
Weight	7 kg (15 pounds)
Action	Mechanical
Sights:	
Front	Three-post system
Rear	Adjustable range, with two peepholes: 2-mm peephole for daylight and 7-mm peephole for limited visibility
Operating temperature	10 degrees to 27 degrees Centigrade (0 degrees to 100 degrees Fahrenheit)
Muzzle velocity	300 mps (984 fps)
Caliber	9 mm

c. **Ammunition.** The M939 9-mm tracer cartridge has a lighter powder charge than a standard 9-mm bullet. The lighter charge enables the cartridge to closely duplicate the trajectory of the AT4 tactical round at ranges out to 700 meters. The M939 cartridge also has a tracer element to enable the firer to compare the impact of the cartridge with the sight picture. The firer can see the tracer out to 550 meters. Firing the M287 tracer trainer helps the firer learn the correct sight picture for moving targets. The cartridge's red tip and half-black base (Figure B-8) distinguishes it from standard 9-mm ammunition, which should never be fired from the M287 tracer trainer.

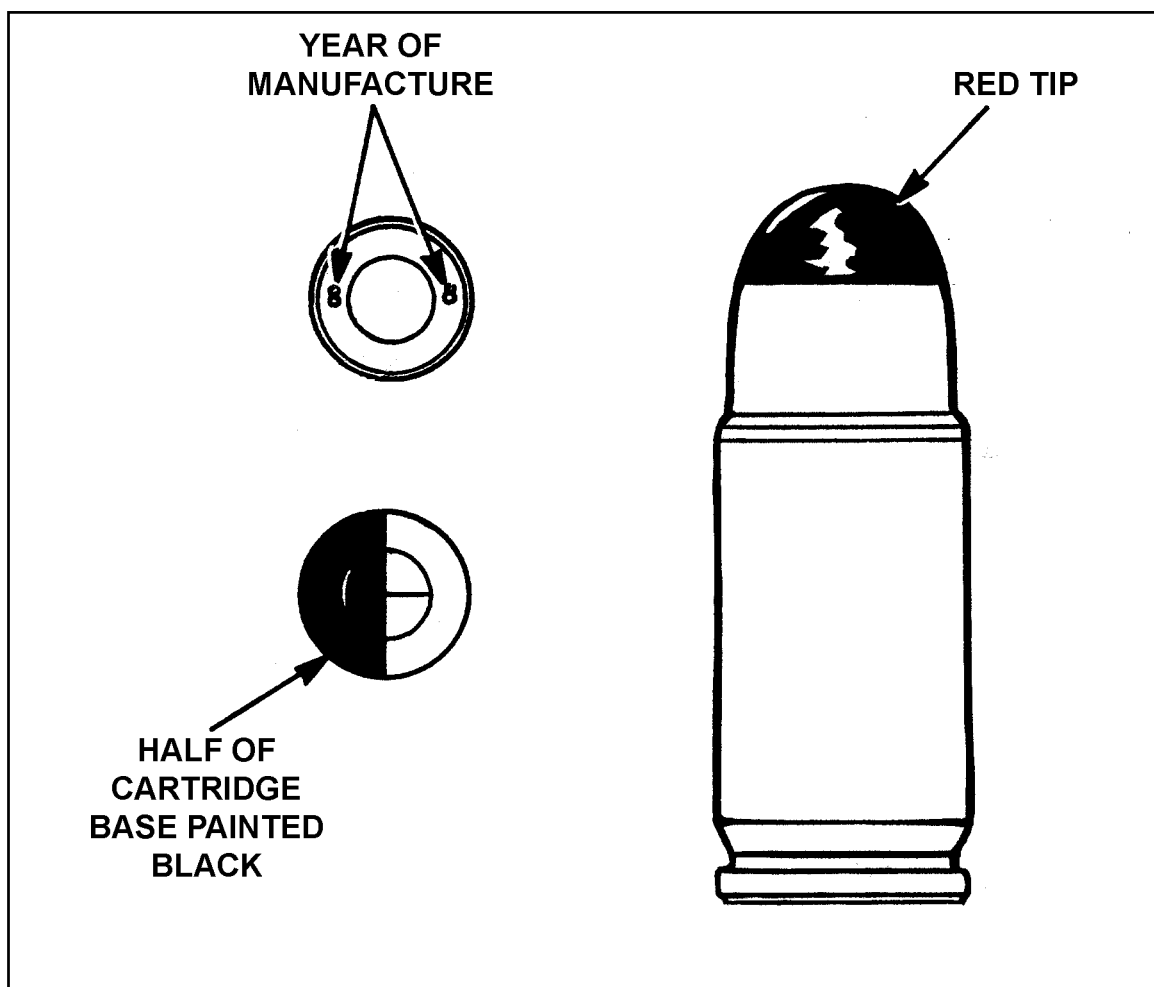


Figure B-8. M939, 9-mm tracer cartridge.

d. **Function Check.** Before the M287 is fired, a function check must be performed to ensure the trigger and safety mechanisms are operating properly. Function check procedures are shown in Table B-1. However, before performing a function check, ensure—

- The *cocking lever* is in the safe ("S") position.
- The *transport safety pin* is fully inserted, with the lanyard wrapped clockwise around the launcher.
- The *bolt* is removed from the breech.

STEP	OPERATOR ACTIONS	FUNCTION CHECK	CORRECTIVE MEASURES
1	Try to cock the tracer trainer	It should not cock	If it cocks, turn the trainer in for repair
2	Remove the transport safety pin and depress the forward safety	The forward safety should spring back when released	If it does not spring back, turn the tracer trainer in for repair
3	Cock the firing mechanism, pressing only the red trigger button	The firing rod should move only slightly and should be captured by the safety lever assembly. No more than half the rod should protrude through the rear of the firing assembly	If the tracer trainer fires, turn it in for repair
4	Recock the firing mechanism; fully depress and continue to hold down the forward safety; press the red trigger button	The tracer trainer should fire	If the tracer trainer <i>fails</i> to fire, turn it in for repair
5	Return the cocking lever to the SAFE position and reinstall the transport safety pin		

Table B-1. Function check, M287 tracer trainer.

WARNING
LOAD LIVE AMMUNITION ONLY ON THE FIRING LINE. NEVER FIRE THE M287 TRACER TRAINER AT HARD TARGETS LESS THAN 125 METERS FROM THE FIRING LINE. REMAIN CLEAR OF THE FRONT OF THE M287, WHICH MUST BE POINTED DOWNRANGE AT ALL TIMES.

e. **Loading.** The M287 tracer trainer is loaded as follows:

(1) The firer performs the function check and places the M287 tracer trainer on his shoulder.

(2) The trainer looks through the barrel from the rear to verify that it contains no obstructions. He inspects the cartridge primer to ensure it is not dented, inserts the bolt into the breech (Figure B-9), and presses in and turns the bolt clockwise to the "S" to

place it in the safe position (Figure B-10). Then he arms the tracer trainer by turning the bolt clockwise to "F" so that it can be fired (Figure B-11).

(3) With the launcher still on his shoulder, the firer cocks the launcher by placing the cocking lever in the cocked position.

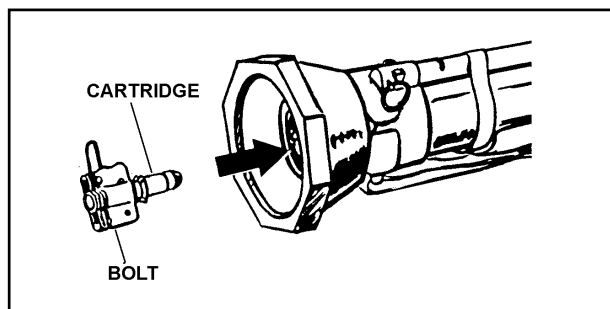


Figure B-9. Inserting bolt with cartridge into the breech of the M287 tracer trainer.

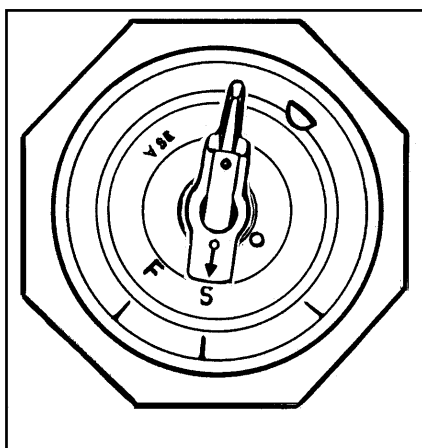


Figure B-10. Ensuring tracer trainer bolt is in the safe position.

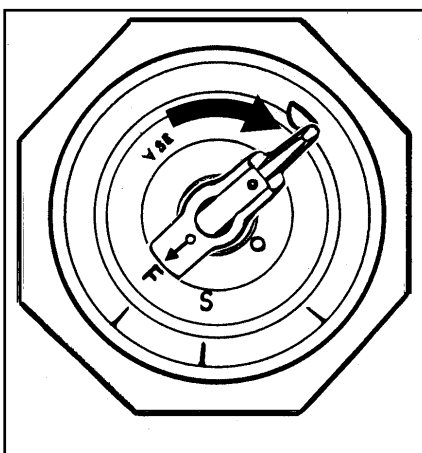


Figure B-11. Arming the tracer trainer.

f. **Unloading.** With the tracer trainer still on the firer's shoulder, the trainer or instructor removes the bolt by turning it counterclockwise past the "S," then pulling the bolt from the breech (Figure B-12). If more rounds are to be fired, he removes the expended cartridge and reloads the bolt.

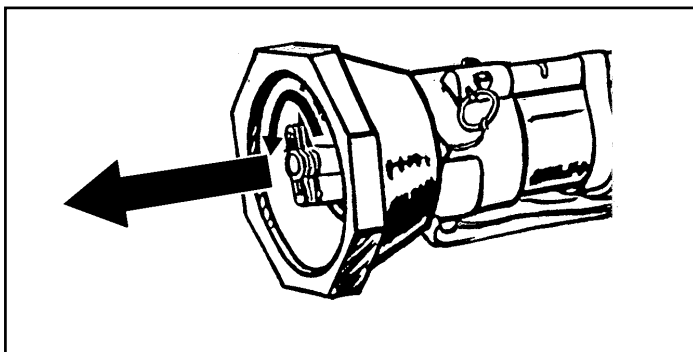


Figure B-12. Unloading the tracer trainer.

g. **Reloading.** With the tracer trainer still on his shoulder, the firer places the cocking lever in the safe position, keeping the tracer trainer on his shoulder and pointing toward the target. The trainer reloads the tracer trainer and prepares it for firing.

<p style="text-align: center;">DANGER NEVER TOUCH THE TRIGGER WHILE RELOADING.</p>
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- h. **Misfire Procedures.** In the event of a misfire—
- (1) Immediately shout "Misfire!"
 - (2) Release the forward safety, recock the launcher, and ensure the cocking lever is erect. Fully depress and hold down the forward safety, then aim and press the red trigger button.
 - (3) If the tracer trainer still fails to fire, repeat the two previous steps.
 - (4) If the launcher fails to fire again, release the forward safety, maintain your firing position, and return the cocking lever to the safe position.
 - (5) Notify the training supervisor.
 - (6) If a real misfire occurs that cannot be corrected by following the steps previously discussed, the trainer or assistant trainer on duty must ensure the cocking lever is in the safe position and that the forward safety is in the vertical position. He must then insert the transport safety pin and remove and inspect the cartridge. If the primer is dented, he replaces it, disposing of the old one IAW range safety SOP. If the primer is not dented, he notifies DS maintenance to inspect the bolt firing pin for damage. He then reloads the tracer trainer and continues the training exercise.
- i. **Range Procedures and Safety.** These are the same as for the M136 AT4.